| Application Number | Application/Control No. | Applicant(s)/Patent under Reexamination | |
|---|---|---|---|
| | 10/810,275 | KABASHIMA ET AL. | |
| | Examiner | Art Unit | |
| | Amar Daglawi | 2618 | |

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/810,275 | 03/26/2004 | Akira Kabashima | 10417-137001 | 8526 |

26211 7590 08/23/2007

FISH & RICHARDSON P.C.
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

| EXAMINER | |
|---|---|
| DAGLAWI, AMAR A | |
| **ART UNIT** | **PAPER NUMBER** |
| 2618 | |
| **MAIL DATE** | **DELIVERY MODE** |
| 08/23/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/810,275 | KABASHIMA ET AL. | |
| | Examiner | Art Unit | |
| | Amar Daglawi | 2618 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *26 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-10,15 and 17-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☒ Claim(s) *11-14,16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> **A person shall be entitled to a patent unless –**
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10, 15, 17-39 are rejected under 35 U.S.C. 102(b) as being anticipated Olver (US 4,560,945).

With respect to claim 1, Olver discloses a signal output apparatus (Fig.1) comprising:

An output amplifier to amplify input signals to output signals (Fig.1) and a distortion canceller (Fig.1, 26) coupled to an input of the output amplifier wherein harmonic distortions appear in said output amplifier and said distortion canceller and said harmonic distortions from said output amplifier and said distortions canceller are created in an opposing manner such that cancellation occurs (col.3, lines 37-67, col.4, lines 1-45).

With respect to claim 2, Olver further teaches said output amplifier and said distortion canceller have substantially the same threshold voltage at which distortions appear (col.3, lines 53-67, col.4, lines 1-27).

With respect to claim 3, Olver further teaches distortion canceller includes an amplifier circuit (Fig.1, 20, 26).

With respect to claim 4, Olver further teaches distortion canceller has almost no influences on outputs of the signal output apparatus in a low voltage range and increases an amplitude of said distortion canceller in a medium voltage range (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a distortion canceller will have no influence on the output signal since in low voltage particularly less than a threshold almost no noise or non-linear distortion appears and at higher voltages more noise will appear].

With respect to claim 5, Olver further teaches due to the influences of said distortion canceller, a relationship between input signals and final outputs of said signal output apparatus becomes closer to a proportional relationship than that without any influence of said distortion canceller (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a more efficient system provides a closer proportional relationship between output and input where the gain is almost one].

With respect to claim 6, Olver further teaches a gain of said distortion canceller is approximately 1 in the low voltage range (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a more efficient system provides a closer proportional relationship between output and input where the gain is almost one].

With respect to claim 7, Olver further teaches said output amplifier and said distortion canceller employ a different type of amplifier circuit from one another (Fig.1, col.3, lines 37-67, col.4, lines 1-45).

With respect to claim 8, Olver further teaches said output amplifier employs a type of amplifier circuit in which high voltage output properties are superior to those of said distortion canceller (col.3, lines 37-67, col.4, lines 1-25).

With respect to claim 9, Olver further teaches said distortion canceller has smaller power consumption than that of said output amplifier (col.3, lines 53-68).

With respect to claim 10, Olver further teaches output amplifier includes a differential amplifier (col.4, lines 28-46).

With respect to claim 15, Olver further teaches a current amplifier to amplify a current without amplifying a voltage is coupled to an input end of said output amplifier, and said distortion canceller is coupled to said current amplifier (Fig.1).

With respect to claim 17, Olver further teaches a data transmission device including said signal output apparatus (Fig.1).

With respect to claim 18, Olver teaches signal output apparatus which multiplies the amplitude of an input signal by a predetermined factor and outputs it as an output signal (Fig.1) and

which has an output amplifier and a pre-amplifier,

wherein (Fig.1, 20, 22, 8)

said output amplifier has output properties

in which its output has a relationship proportional to an input when the input signal is in a low voltage range,

in which its output deviates from the relationship proportional to an input when the input signal is in a medium voltage range, and

in which its output voltage hardly increases or does not increase at all when the input signal is in a high voltage range (col.3, lines 37-67, col.4, lines 1-45) [It is

inherent that a distortion canceller will have no influence on the output signal since in low voltage particularly less than a threshold almost no noise or non-linear distortion appears and at higher voltages more noise will appear].

and wherein

said pre-amplifier (Fig.1, 20) has output properties

in which its output has a relationship proportional to an input when an input signal is in said low voltage range, and in which its output deviates from the relationship proportional to an input into an opposite manner to the deviation of said output amplifier when the input signal is in said medium voltage range (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a pre-amplifier will have no influence on the output signal since in low voltage particularly less than a threshold almost no noise or non-linear distortion appears and at higher voltages more noise will appear].

With respect to claim 19, Olver further teaches said output amplifier and said pre-amplifier have substantially the same threshold voltage at which deviations appear (col.3, lines 53-67, col.4, lines 1-27).

With respect to claim 20, Olver further teaches a pre-amplifier includes an amplifier circuit (Fig.1, 20, 26).

With respect to claim 21, Olver further teaches said pre-amplifier has almost no influences on outputs of the signal output apparatus in a low voltage range and increases an amplitude of said distortion canceller in a medium voltage range (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a pre-amplifier will have no influence on the output signal since in low voltage

particularly less than a threshold almost no noise or non-linear distortion appears and at higher voltages more noise will appear].

With respect to claim 22, Olver further teaches due to the influences of said pre-amplifier, a relationship between input signals and final outputs of said signal output apparatus becomes closer to a proportional relationship than that without any influence of said pre-amplifier (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a pre-amplifier will have no influence on the output signal since in low voltage particularly less than a threshold almost no noise or non-linear distortion appears and at higher voltages more noise will appear].

With respect to claim 23, Olver further teaches a gain of said pre-amplifier is approximately 1 in the low voltage range (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a more efficient system provides a closer proportional relationship between output and input where the gain is almost one].

With respect to claim 24, Olver further teaches said output amplifier and said pre-amplifier employ a different type of amplifier circuit from one another (Fig.1, col.3, lines 37-67, col.4, lines 1-45).

With respect to claim 25, Olver further teaches said output amplifier employs a type of amplifier circuit in which high voltage output properties are superior to those of said pre-amplifier (col.3, lines 37-67, col.4, lines 1-25).

With respect to 26, Olver further teaches said pre-amplifier has smaller power consumption than that of said output amplifier (col.3, lines 53-68).

With respect to claim 27, Olver further teaches said output amplifier includes a differential amplifier (col.4, lines 28-46).

With respect to claim 28, Olver further teaches a data transmission device including said signal output apparatus (Fig.1).

With respect to claim 29, Olver teaches a signal output apparatus which multiplies the amplitude of an input signal by a predetermined factor and outputs it as an output signal (Fig.1) and which has an output amplifier and a pre-amplifier, wherein said output amplifier has output properties in which its output has a relationship proportional to an input when an input signal is in a low voltage range in which its output becomes lower than the relationship proportional to the input represents when the input signal is in a medium voltage range (Fig.1, 20, 22,8) (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a pre-amplifier will have no influence on the output signal since in low voltage particularly less than a threshold almost no noise or non-linear distortion appears and at higher voltages more noise will appear], and
in which its output voltage hardly increases or does not increase at all when the input signal is in a high voltage range (col.3, lines 37-67,col.4, lines 1-45),
said pre-amplifier supplies said input signal without being amplified to said output amplifier when the input signal is in said low voltage range, and amplifies by a predetermined gain and supplies to said output amplifier when the input signal is in said medium voltage range (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a pre-amplifier will have no influence on the output signal since in low voltage particularly less than a threshold almost no noise or non-linear distortion appears and at higher voltages more noise will appear].

With respect to claim 30, Olver further teaches said output amplifier and said pre-amplifier have substantially the same threshold voltage at which deviations appear (col.3, lines 53-67, col.4, lines 1-27).

With respect to claim 31, Olver further teaches said pre-amplifier includes an amplifier circuit (Fig.1, 20, 26).

With respect to claim 32, Olver further teaches said pre-amplifier has almost no influences on outputs of the signal output apparatus in a low voltage range and increases an amplitude of said distortion canceller in a medium voltage range (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a pre-amplifier will have no influence on the output signal since in low voltage particularly less than a threshold almost no noise or non-linear distortion appears and at higher voltages more noise will appear].

With respect to claim 33, Olver further teaches influences of said pre-amplifier, a relationship between input signals and final outputs of said signal output apparatus becomes closer to a proportional relationship than that without any influence of said pre-amplifier (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a pre-amplifier will have no influence on the output signal since in low voltage particularly less than a threshold almost no noise or non-linear distortion appears and at higher voltages more noise will appear].

With respect to claim 34, Olver further teaches a gain of said pre-amplifier is approximately 1 in the low voltage range (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a more efficient system provides a closer proportional relationship between output and input where the gain is almost one].

With respect to claim 35, Olver further teaches said output amplifier and said pre-amplifier employ a different type of amplifier circuit from one another (Fig.1, col.3, lines 37-67, col.4, lines 1-45).

With respect to claim 36, Olver further teaches output amplifier employs a type of amplifier circuit in which high voltage output properties are superior to those of said pre-amplifier (col.3, lines 37-67, col.4, lines 1-45) [It is inherent that a pre-amplifier will have no influence on the output signal since in low voltage particularly less than a threshold almost no noise or non-linear distortion appears and at higher voltages more noise will appear].

With respect to claim 37, Olver further teaches said pre-amplifier has a smaller power consumption than that of said output amplifier (col.3, lines 53-68).

With respect to claim 38, Olver teaches said output amplifier includes a differential amplifier (col.4, lines 28-46).

With respect to claim 39, Olver further teaches a data transmission device including said signal output apparatus (Fig.1).

***Allowable Subject Matter***

Claims 11-14 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: With respect to claim 11, The prior art of record neither anticipates nor renders obvious the claimed wherein said output amplifier has a first transistor which is coupled

between a power supply line and a ground line, a second transistor which is coupled in parallel to said first transistor between the power supply line and the ground line, and a first resistor which is coupled between said first and second transistors and the ground line, and wherein said distortion canceller has a third transistor whose collector is coupled to the power supply line and whose emitter is coupled to a second resistor, and a fourth transistor whose collector is coupled to the power supply line and whose emitter is coupled to a third resistor, whereas an end of the second and third resistor which are opposite to the second and third transistors are coupled to one another, and the point of coupling is coupled to the ground line.

With respect to claim 16, the prior art neither anticipates nor renders obvious the claimed among circuit elements which comprise said output amplifier and said distortion canceller, the product of a collector current through a transistor connected to the ground line and a resistance value of a resistor connected to the ground line through the transistor is substantially equal in said output amplifier and said distortion canceller.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amar Daglawi whose telephone number is

571-270-1221. The examiner can normally be reached on Monday- Friday (7:30 AM- 5:00 AM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lana N. Le can be reached on 571-272-7891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amar Daglawi

8-9-07

LANA LE
PRIMARY EXAMINER